I Finally Got it: Another Lesson in Perseverance

You know in the constant quest for radio quietness that doesn't include turning the damn thing off, I decided a couple of years ago to buy an active loop antenna. I have had some experience with loops before and the results have been encouraging especially when you use them for receiving. The ability to null out noise while bringing up the signal desired is always desirable and I wondered how a commercial loop would work. So off I went to GPS Central with a few dollars in my pocket and bought an MFJ-1886, the most popular receiving loop on the market. I rushed to put it on a small rotator on top of a tripod and placed it at some strategic parts of my yard to test it out. Let me say right now that the results were, well, underwhelming. It had a large internal noise problem and wasn't directional at all. So, I moved it and was met with the same results. I put it on my garage roof and the same thing. It was terrible in terms of constant noise especially electrical interference and couldn't even be used for finding that interference. What a pain in the neck it was. I pretty much gave up on the thing until a week ago when I put it on top of my VHF/UHF stack on the garage roof and I was fed up with this expensive POS.

Yesterday I decided to pull it down off the stack and pull it apart on the bench. Now I've had it apart before when I inadvertently transmitted into the stupid thing and sent the high gain low noise preamp chips to that big "Oh (&*%$, Tiny Click Place in the Sky". Anybody who has blown stuff up knows what I mean by that. It's when tiny particles project themselves at light speed across the shop narrowly missing your forehead and you notice a small crater on the top of the chip in question and a faint smell. It proved what the manual warns you against will come true if you make a boo boo. I ordered some new chips from the jobber and replaced them and put it back together. Still no joy. It came to life in the same way as before but was still not working properly.

But yesterday was different. I was bound and determined to find out why this thing wasn't working the way the YouTube videos say it should. Here's a great video on how well it should work: https://www.youtube.com/watch?v=ECDklLp2FOk When I pulled it down, I noticed that the case was broken from when there was another whoops that happened but that is easy to fix. In. The meantime before I started the repair, I pulled the Diamond 25-3000 Mhz Discone off the top of a pole installed on a chain link fence drilled and tapped to hold it up at 17' on the top of a 10' pole. My notion was to install the MFJ-1886 on a shorter pipe with a small rotator at about 10'. This would let me easily install and remove the loop while testing it. Then I pulled the loop apart.

When I got it apart and pulled the little board out of the case it was in, I noticed the transformer looked a bit shaky. I desoldered it and it was indeed shorted on the primary, so I rewound the ferrite with new wires and replaced it. I put it all back together and it still didn't work the way it should have. So, I pulled it down again and checked the voltages and everything looked good so I put it back up and still no joy. I downloaded the schematic and found that it was different than what this board was. The schematic is Version 03.3, and the board was Version 03.8. I compared the two versions and noticed that the output transformer was not used to pass DC on the new one and it was fed with a couple of .1 mFd capacitors from the outputs of the amplifiers. Everything checked out and like an idiot I put it back up and tried it. Still no joy.

It seemed to me that the loop was not acting like a loop but rather as just an active antenna. Only one side of the amplifier pair was connected to the loop element. Then I checked continuity on some of the components and that is when I found the problem. There was one 220 nH inductor used on the low pass filter on one amplifier input that was open. I looked in my inductor drawers and found two 220 nH inductors and I took both of them off the board and replaced them with the two new ones. I was excited to try it again, but it was 10:00 at night when I finally got on the ladder again and put it back up with a headlamp on my forehead to see in the gloom. I turned on the power and it immediately jumped to life, and I compared it to the delta loop on a few bands and it worked perfectly. It nulled out stations and noise exactly as it was supposed to and had exceptionally low noise and I was able to hear everything I wanted to hear perfectly with no interference at all when I null it out. I was looking at an S1 noise level with it while on the delta loop it was S3-4. Wow does this thing ever work. I tried it on the broadcast band and was able to hear even weak stations in the States without any interference. We got it.

So, what's the bottom line? This thing is exceptional from the broadcast band to 30 Mhz and works exactly as it is supposed to. I would buy another one anytime and recommend it for anyone that has a dedicated rx receive port on their radio. I use a Kenwood TS-590S for most of my ham radio work and this little device is worth every penny I spent on it. They are not cheap but it is worth the $375 that they cost. MFJ deserves congratulations on this great device. You can buy them through GPS Central here if you like and make sure you mention my name: https://www.gpscentral.ca/



On the roof and it still didn’t work. This was a few months ago.



Eureka. It functions perfectly and it’s only 10’ up and hears everything that the delta loop hears with lower noise.

73
Tom VE6ARG